

**REMARKS**

Claims 29-64, which were withdrawn from consideration, are now canceled without prejudice. Applicants reserve the right to pursue claims similar or identical to claims 29-64 in one or more divisional applications claiming priority to the instant application.

Claim 1 has been amended to incorporate the limitation from claim 3 that the first and second alleles of the first SNP are captured by ASO hybridization that recognizes only the first and second alleles respectively. Claim 1 has also been amended to clarify that the analysis of the second SNP is performed on the captured nucleic acid. Thus, no new matter has been added.

Claim 3 has been amended to delete the limitation now incorporated into amended claim 1. Claim 23 was canceled in view of the amendment to claim 1.

New claim 65 has been added which depends from claim 1. Claim 65 recites a haplotype that comprises an ordered combination of alleles in defined genetic region that co-segregates. Support for this amendment can be found throughout the specification, for example, on page 12, lines 3-4.

Claims 1-28 and 65 are now pending for examination.

**Interview with Examiner Jeanine Goldberg**

Initially, Applicants and Applicants' representative express thanks to Examiner Goldberg for her courtesy in granting and conducting a personal interview with Applicant and Applicants' representative on September 17, 2003. The issue of the rejection of the claims in view of §102 and §103 was discussed in the interview with the Examiner. Each of these issues is discussed in more detail below.

**Rejection of Claims 1-4, 6-7, 11, 14, 16, 18-19, 22-23 and 25-28 under 35 U.S.C. §102(e)**

Claims 1-4, 6-7, 11, 14, 16, 18-19, 22-23 and 25-28 were rejected under 35 U.S.C. §102(e) as being anticipated by Gentalen, et al., U.S. Pat. No. 6,306,643 ("Gentalen").

At the outset, Applicants do not concede that Gentalen is properly prior art to the Applicant's claimed invention prior to amendment herein. Applicants reserve the right to

establish an invention date for the claimed invention that is on or before August 24, 1998, which is the effective 35 U.S.C. §102(e) date of Gentalen relied on in the Office Action.

Nevertheless, in response to the Office Action, Applicants are not aware of any teaching in Gentalen that suggests capture of a nucleic acid by hybridization of the nucleic acid with an ASO to identify only a first allele of a first SNP as recited in claim 1, as amended in order to determine the haplotype. Instead, Gentalen describes hybridizing a nucleic acid to a surface containing probes for the detection of alleles of *different* polymorphic sites of the nucleic acid. Although Gentalen does have a control hybridization reaction that captures a specific SNP, it cannot be used alone to determine the haplotype but requires use of pooled hybridization reaction. Gentalen uses a pooled hybridization reaction to determine the haplotype. The amended claims indicate that the two hybridization reactions identify only a first and second SNP allele respectively. Thus the claims do not read on an analysis performed using a pooled hybridization reaction. Accordingly, it is respectfully requested that the rejection of claim 1 be withdrawn. The remaining claims depend, either directly or indirectly, from independent claim 1, as amended, and it is respectfully requested that the rejection of these claims be withdrawn as well for at least the above-mentioned reasons.

**Rejection of Claims 1-4, 6-7, 11, 14, 16, 18-22, 25 and 27 under 35 U.S.C. §103(a)**

Claims 1-4, 6-7, 11, 14, 16, 18-22, 25 and 27 were rejected under 35 U.S.C. §103(a) as being unpatentable over Sapolsky, et al., U.S. Pat. No. 5,858,659 (“Sapolsky”) in view of Murphy, et al., WO 99/09164 (“Murphy”).

Applicants are not aware of any suggestion or motivation for the combination of Sapolsky with Murphy. Sapolsky appears to be a method of detecting polymorphisms, while Murphy appears to describe specific BRCA2 gene polymorphisms. However, Sapolsky does not teach the detection of haplotypes, nor does Sapolsky suggest or motivate the detection of BRCA2 genes as described in Murphy. Accordingly, the Office Action has not described a suggestion or motivation for the combination of references.

Furthermore, to the extent that motivation exists for the combination of Sapolsky and Murphy (which Applicants do not concede), Murphy does not cure the deficiencies of Sapolsky

with respect to the claimed invention. Sapolsky describes a method of binding a nucleic acid to a surface using oligonucleotide probes to identify a polymorphic marker of the nucleic acid (see, e.g., the abstract and Fig. 3). Sapolsky nowhere suggests the detection of at least two SNPs within a polymorphic locus of a nucleic acid sample. Murphy describes certain BRCA2 haplotypes, but does not cure the deficiencies of Sapolsky.

Accordingly, it is respectfully requested that the rejection of claim 1 be withdrawn. The remaining claims depend, either directly or indirectly, from claim 1, and it is respectfully requested that the rejection of these claims be withdrawn as well as well for at least the above-mentioned reasons.

**Rejection of Claims 5 and 9-10 under 35 U.S.C. §103(a)**

While the Office Action is less than clear on this issue (and the following issues as well), it appears that claims 5 and 9-10 were rejected under 35 U.S.C. §103(a) as being unpatentable over Sapolsky in view of Murphy, and also Gentalen in view of Newton, U.S. Pat. No. 5,525,494 (“Newton”).

For at least the reasons explained above with respect to the rejections under §102(e) in view of Gentalen and §103(a) in view of Sapolsky, the premise of the respective rejections (that Gentalen and Sapolsky teach or render obvious all of the limitations of claim 1) is believed to be incorrect. Accordingly, while Applicants do not concede that there would have been any motivation to combine Sapolsky with Murphy, or Gentalen with Newton, in the manner suggested in the Office Action, the present rejection cannot stand, regardless. Thus, withdrawal of the rejection of claims 5 and 9-10 is respectfully requested for at least these reasons.

**Rejection of Claims 5, 8 and 12-13 under 35 U.S.C. §103(a)**

It appears that claims 5, 8 and 12-13 were rejected under 35 U.S.C. §103(a) as being unpatentable over Sapolsky in view of Murphy, and also Gentalen in view of Walt, U.S. Pat. No. 6,327,410 (“Walt”).

For at least the reasons explained above with respect to the rejections under §102(e) in view of Gentalen and §103(a) in view of Sapolsky, the premise of the respective rejections (that

Gentalen and Sapolsky teach or render obvious all of the limitations of claim 1) is believed to be incorrect. Accordingly, while Applicants do not concede that there would have been any motivation to combine Sapolsky with Murphy, or Gentalen with Walt, in the manner suggested in the Office Action, the present rejection cannot stand, regardless. Thus, withdrawal of the rejection of claims 5, 8 and 12-13 is respectfully requested.

**Rejection of Claim 15 under 35 U.S.C. §103(a)**

It also appears that claim 15 was rejected under 35 U.S.C. §103(a) as being unpatentable over Sapolsky in view of Murphy, and also Gentalen in view of Arnold et al., U.S. Pat. No. 6,410,231 (“Arnold”).

For at least the reasons explained above with respect to the rejections under §102(e) in view of Gentalen and §103(a) in view of Sapolsky, the premise of the respective rejections (that Gentalen and Sapolsky teach or render obvious all of the limitations of claim 1) is believed to be incorrect. Accordingly, while Applicants do not concede that there would have been any motivation to combine Sapolsky with Murphy, or Gentalen with Arnold, in the manner suggested in the Office Action, the present rejection cannot stand, regardless. Thus, withdrawal of the rejection of claim 15 is respectfully requested.

**Rejection of Claim 17 under 35 U.S.C. §103(a)**

It also appears that claim 17 was rejected under 35 U.S.C. §103(a) as being unpatentable over Sapolsky in view of Murphy, and also Gentalen in view of Pinkel et al., U.S. Pat. No. 6,210,878 (“Pinkel”).

For at least the reasons explained above with respect to the rejections under §102(e) in view of Gentalen and §103(a) in view of Sapolsky, the premise of the respective rejections (that Gentalen and Sapolsky teach or render obvious all of the limitations of claim 1) is believed to be incorrect. Accordingly, while Applicants do not concede that there would have been any motivation to combine Sapolsky with Murphy, or Gentalen with Pinkel, in the manner suggested in the Office Action, the present rejection cannot stand, regardless. Thus, withdrawal of the rejection of claim 17 is respectfully requested.

**Rejection of Claim 24 under 35 U.S.C. §103(a)**

It also appears that claim 24 was rejected under 35 U.S.C. §103(a) as being unpatentable over Sapolsky in view of Murphy, and also in view of Gentalen.

Initially, it appears that the Office Action contains a typographical error, and the rejection should have been Gentalen in view of Caskey, U.S. Pat. No. 6,153,379 ("Caskey"), based on the reasons for the rejection given in the Office Action.

For at least the reasons explained above with respect to the rejections under §102(e) in view of Gentalen and §103(a) in view of Sapolsky, the premise of the respective rejections (that Gentalen and Sapolsky teach or render obvious all of the limitations of claim 1) is believed to be incorrect. Accordingly, while Applicants do not concede that there would have been any motivation to combine Sapolsky with Murphy, or Gentalen with Caskey, in the manner suggested in the Office Action, the present rejection cannot stand, regardless. Thus, withdrawal of the rejection of claim 24 is respectfully requested.

**CONCLUSION**

In view of the foregoing amendments and remarks, this application should now be in condition for allowance. A notice to this effect is respectfully requested. If the Examiner believes, after this amendment, that the application is not in condition for allowance, the Examiner is requested to call the Applicants' attorney at the telephone number listed below.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicants hereby request any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 23/2825.

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